

CLAIMS

1. A swinging apparatus characterized by comprising:

a base member;

a mount on which a load is placed;

a swing arm that, in a set position where the mount is disposed on the base member, diagonally positions the base member and mount, the swing arm swinging around a connection portion of the base member to move the mount upward or downward and forward or backward with respect to the base member; and

a posture holding portion that, during the swinging operation of the swing arm, rotatively moves the mount around a connection portion of the mount in a direction opposite to a rotatively moving direction of the swing arm to hold the mount in a horizontal posture.

2. The swinging apparatus according to claim 1, characterized in that the posture holding portion comprises a fixed sprocket fixed to one of the connection portions of the base member and mount, a movable sprocket rotatively movably supported by the other connection portion, and an annular belt that joins the fixed sprocket and the movable sprocket together.

3. The swinging apparatus according to claim 1 or 2, characterized by further comprising:

a rotatively moving portion comprising the base member, and a bearing portion that rotatively movably supports the base member;

a swinging portion comprising a horizontal rotating shaft disposed so that an axis of the horizontal rotating shaft is horizontally directed with respect to the base member, and the swing arm attached to a shaft end of the horizontal rotating shaft and using the horizontal rotating shaft as a connection portion to the base member; and a driving portion that rotates the horizontal rotating shaft around an axis of the driving portion, and

in that a link mechanism is interposed between the rotatively moving portion and the swinging portion to link a swinging operation of the swing arm to a rotatively moving operation of the base member, and

the link mechanism comprises:

a transmitting portion comprising a vertical rotating shaft having an axis extending in a direction parallel to a direction in which a rotating center axis of the base member extends, the transmitting portion being able to transmit rotary motion around the vertical rotating shaft to the base member; and

a converting portion that converts the rotary motion around the horizontal rotating shaft into rotary motion around the vertical rotating shaft.

4. The swinging apparatus according to claim 3, characterized in that the converting portion comprises a horizontal gear fitted around the horizontal rotating shaft so as to be rotatively movable integrally with the horizontal rotating shaft and a vertical gear supported around the vertical rotating shaft so as to be rotatively movable integrally with the vertical rotating shaft; the vertical gear being engageable

with the horizontal gear, the vertical rotating shaft being provided in the base member.

5. The swinging apparatus according to claim 3 or 4, characterized in that the transmitting portion comprises a rotating sprocket fixed to the vertical rotating shaft so as to be rotatively movable integrally with the vertical rotating shaft, a fixed sprocket fixed to the rotating center shaft of the base member, and an annular belt that joins the rotating and fixed sprockets together.

6. The swinging apparatus according to any of claims 3 to 5, characterized in that the base member is attached to a floor panel of a car body, a seat portion in which a passenger can sit is connected to the mount, and the seat portion is projected out of or retracted into the vehicle while being turned from a forward position in which the seat portion is directed toward a front of the vehicle, to an opening in the vehicle, by means of a rotatively moving operation of the rotatively moving portion and a swinging operation of the swinging portion,

when the seat position is in the forward position, the swing arm diagonally positions the base member and the mount located above the base member but can be almost inverted around the horizontal rotating shaft, and

when the seat portion is in a loading and unloading position outside the vehicle, the swing arm positions the base member located inside the car and the mount projecting out of the car so as to hang toward the exterior of the car.